



X-RAY ASTRONOMY 2019

Current Challenges and New Frontiers in the Next Decade

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X-ray reverberation in AGN: towards an extended corona

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X-ray reverberation in Active Galactic Nuclei, believed to be the result of the reprocessing of coronal photons by the underlying accretion disc, has allowed us to probe the properties of the inner-most regions of the accretion flow and the central black hole. Our current model (KYNREFREV) computes the time-dependent reflection spectra of the disc as a response to a flash of primary power-law radiation from a point source corona located on the axis of the black hole accretion disc (lamp-post geometry). Full relativistic effects are taken into account. The ionization of the disc is set for each radius according to the amount of the incident primary flux and the density of the accretion disc. We detect wavy residuals around the best-fit reverberation model time lags at high frequencies. This result suggests that the simple lamp-post geometry does not fully explain the X-ray source/disc configuration in Active Galactic Nuclei. There has been a noticeable progress into the development of codes for extended coronae (Wilkins+16, Chainakun & Young 2017, Taylor & Reynolds 2018a,b). Indeed, the model from Chainakun & Young (2017), consisting of two axial point sources illuminating an accretion disc that produce the reverberation lags is able to reproduce the observed time-lag versus frequency spectra.

Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

Affiliation

Astronomical Institute of the Czech Academy of Sciences

Primary author: CABALLERO-GARCIA, Maria D. (Astronomical Institute of the Czech Academy of Sciences (Prague))

Presenter: CABALLERO-GARCIA, Maria D. (Astronomical Institute of the Czech Academy of Sciences (Prague))

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